



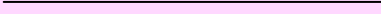

# Ohm's Law

|            | Resistance                            | Current                                 | Voltage   |
|------------|---------------------------------------|---|---|
| Definition | The opposition to the flow of charges | The flow of electrons through a circuit | Potential Difference ( the push behind electricity) |
| Symbol     | R                                     | I                                       | V   |
| Equation   | $R = \frac{V}{I}$                     | $I = \frac{V}{R}$                       | $V = I R$   |

## Resistance

## Current

## Voltage

| Label      | $\Omega$ - Omega symbol  | A - amperes   | V - volts   |
|------------|--|---|---|
| Depends on | <p><b>The size of the wire.</b></p> <p>Thick wire – Less resistance<br/></p> <p>Thin wire –<br/>More resistance<br/></p> <p>Long wire – more resistance<br/></p> <p>Short wire- less resistance<br/></p> | <p>The resistance in the circuit</p> <p>Greater resistance- less current</p> <p>Less resistance the greater the current</p> | <p>The voltage source</p> <p>Greater Potential difference = greater voltage</p> |

To obey Ohm's law means a conductor has a constant resistance regardless of the voltage.

- If you know two of the three variables you should be able to solve for the third.
- When using Ohm's law always use the 3 step form
  - 1. Write the equation
  - 2. Replace the known values
  - 3. Solve the problem
  - . Label with the correct unit of measurement.

# Practice problems

In a circuit, 0.5 A is flowing through the bulb. The voltage across the bulb is 4.0 V. What is the bulb's resistance?

1. Write the equation



$$R = \frac{V}{I}$$

2. Replace the known values



$$R = \frac{4.0}{0.5}$$

3. Solve



$$R = 8$$

4. Label



$$R = 8 \, \Omega$$

# Practice problem

- You light a light bulb with a 1.5 volt battery. If the bulb has a resistance of 10 ohms, how much current is flowing?

1. Write the equation

$$I = \frac{V}{R}$$

2. Replace the known values

$$I = \frac{1.5}{10}$$

3. Solve

$$I = 0.15$$

4. Label correct sig.fig

$$I = 0.2 \text{ A}$$

# Ohm's Law

|            | Resistance | Current | Voltage |
|------------|------------|---------|---------|
| Definition |            |         |         |
| Symbol     |            |         |         |
| Equation   |            |         |         |

Resistance

Current

Voltage

|            |  |  |                               |
|------------|--|--|-------------------------------|
| Label      |  |  |                               |
| Depends on | <p><b>The size of the wire.</b></p> <p><b>_____</b></p> <p>_____</p> <p>_____</p> <p>_____</p> | <p>The resistance<br/>in the circuit</p> | <p>The voltage<br/>source</p> |

To obey Ohm's law means a conductor has a constant resistance regardless of the voltage.

- If you know two of the three variables you should be able to solve for the third.
- When using Ohm's law always use the 3 step form
  - 1. Write the equation
  - 2. Replace the known values
  - 3. Solve the problemLabel with the correct unit of measurement.



# Practice problems

In a circuit, 0.5 A is flowing through the bulb. The voltage across the bulb is 4.0 V. What is the bulb's resistance?

1. Write the  
equation



2. Replace the  
known values



3. Solve



4. Label



# Practice problem

- You light a light bulb with a 1.5 volt battery. If the bulb has a resistance of 10 ohms, how much current is flowing?

1. Write the equation 

2. Replace the known values 

3. Solve 

4. Label 